

Ophiostomatoid Fungi in Pine Wilt Disease and Oak Wilt Disease in Korea

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Pinewood nematode (PWN, *Bursaphelenchus xylophilus*) is a serious pathogenic worm that quickly dry pine trees to death. Recently, PWN has been devastating huge amounts of conifer trees in Korea. As a first step to explore the association and ecological roles of fungi in PWN life cycle in Korea, in this study we first isolated and identified fungi from PWN-infested Korean pine and Japanese black pine wood sampled in Jinju, Sacheon, Pocheon, Chuncheon, Gwangju, and Hoengseong in Korea. A total of 144 fungal isolates were obtained from Japanese black pine wood and 264 fungal isolates from Korean pine wood. Their morphology and nucleotide sequences of the ITS rDNA and δ -tubulin gene were examined for species identification. *Ophiostoma ips*, *Botrytis anthophila*, *Penicillium* sp., *Hypocrea lixii*, *Trichoderma atroviride*, *O. galeiforme*, *Fusarium proliferatum* were identified from Japanese black pine wood. *Leptographium koreanum*, *L. pini-densiflorae*, *Ophiostoma ips*, *Penicillium raistrick*, *Trichoderma* sp. were isolated from Korean pine wood. *O. ips* and *L. koreanum* were the major species on the two different PWN-infested pine tree. The cultivation of PWN on fungal mat of the identified species did some enhance PWN reproduction.

The ambrosia beetle, *Platypus koryoensis*, is a serious pest of oak trees in Korea. In this study we investigated filamentous fungi present in the body of the beetle. Fourteen genera of filamentous fungi belonging to Ascomycota and Basidiomycota were isolated. All the obtained genera were isolated in the mitosporic state. The identified fungi were classified in 11 distinct orders including the Ascomycota (Eurotiales, Hypocreales, Microascales, Ophiostomatales, Pleosporales, and Sordiales) and Basidiomycota (Agaricales, Corticiales, Polyporales, and Russulales Xylariales). Within Ascomycota, 13 species were found. Meanwhile five species were found within Basidiomycota. The results showed the presence of diverse fungi in *P. koryoensis*. Among the isolated fungi, some were able to produce wood degrading enzymes.

Further fungal isolation was performed with *P. koryoensis* infested *Quercus mongolica* trees sampled at Kumdan mountain in Hanam-Si, Gyeonggi province from June of 2009 to June of 2010. *Penicillin* spp. and *Trichoderma* spp. were the major species of mold fungi group. *Pichia guilliermondii* was the major species of mold yeast group. *Raffaelea quercus-mongolicae* was also isolated, but its isolation frequency was not high. Other species identified were *Ambrosiella xylebori*, *Fusarium solani*, *Cryphonectria nitschke*, *Chaetomium globosum*, and *Gliocladium viride*, *Candida kashinagacola*, *C. maritima*, *C. vanderkluftii*, *Saccharomycopsis crataegensis*.